

type. If this reason were adopted as a criterion, every type of road in existence would be condemned. In some instances this type has been built where it was entirely inadequate for the traffic it had to support, and then because it raveled or rutted up under the severe strain, it has forthwith been condemned for any and all road surfaces. It would be just as sensible to condemn a buggy for all uses merely because it broke down under a load that would have taxed the strength of a heavy wagon. In other instances the failure has been due to poor materials and careless construction, a combination which is fatal to a road of any type.

These facts, however, have opened the way for considerable criticism from those having some other type of road to sell to the public, and the guilty official who has failed to observe even the primary steps in road building, is apparently only too glad to join the cry of those advocating the more expensive types of roads, in order that he may cover up his own mistakes and failures by condemning the road he failed on as a type now obsolete and worthless.

On the other hand there is no lack of evidence of the penetration method having produced some splendid roads where good materials have been used under competent supervision and thorough attention has been paid to details. A typical example of its success is found in the large mileage of fine asphalt-macadam roads in Los Angeles county, California, where the mixing method has not been used at all. Relative to this system of roads an editorial in *Engineering and Contracting* for April 22, 1914, says in part:

“Some of the earlier asphalt-macadam roads built by the county went to pieces, or, to express the facts more precisely, rutted badly under traffic. Upon digging up the rutted portions, it was found that an excess of asphaltic oil had been used in some cases, and in nearly all cases it was apparent that the broken stone had not been sufficiently rolled before pouring the oil over the surface. As a result of this experience, the specifications were changed to provide a water-bound macadam base with a thin top of asphalt-macadam made by the penetration process. Roads thus made have been in exis-